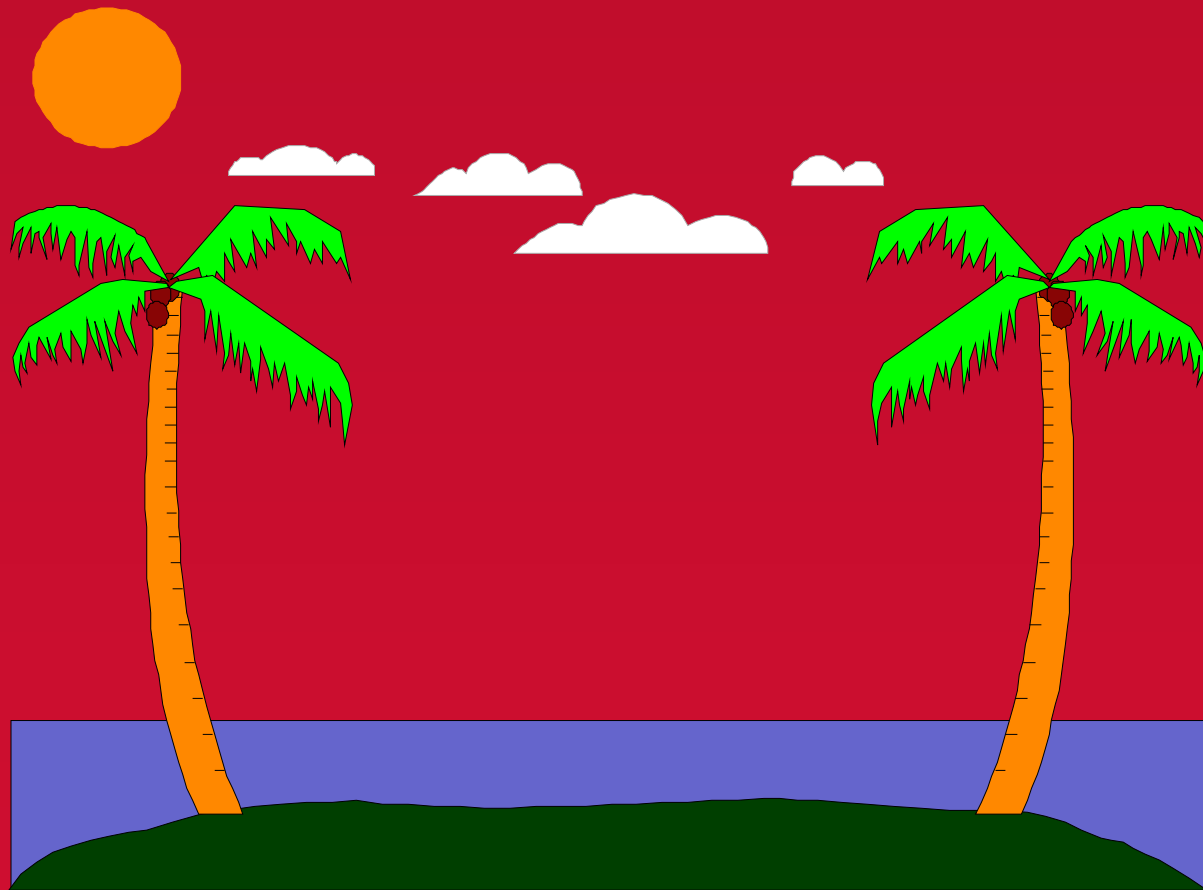


HEAT INJURY PREVENTION

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REFERENCES

AR 40-5

FM 21-20-1

FM 1-301

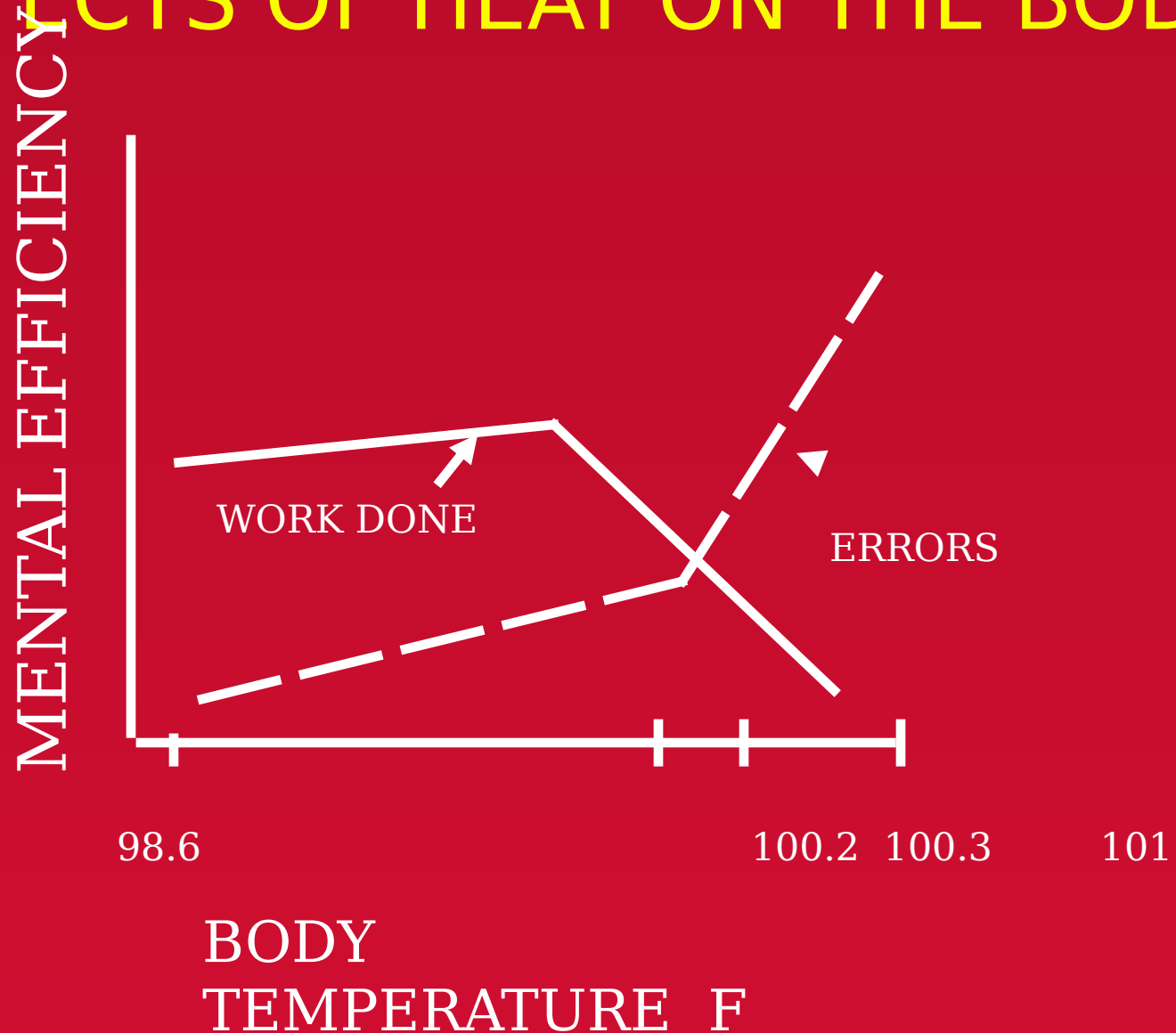
FM 21-76



WHY IS HEAT PREVENTION IMPORTANT

- ✱ Combat capability is contingent upon the ability to adapt to the environment
- ▢ The body can survive only at a narrow range of core temperatures

EFFECTS OF HEAT ON THE BODY





HOW THE BODY RELEASES HEAT

- ▮ Radiation: transfer of heat from a hotter object to a cooler object though space by radiant energy
- ▮ Conduction: transfer of heat from molecule to molecule of adjacent objects



HEAT RELEASE CONTINUED

- ✱ Convection: transfer of heat in liquids or gases in which molecules are free to move
- ▢ Evaporation: heat loss involves the changing of a substance from its liquid state to its gaseous form



INFLUENCING FACTORS

- ☀ Air temperature
 - ▢ Temperature of surrounding objects
 - ▢ Sun's radiant heat
 - ▢ Relative humidity
 - ▢ Air movement
 - ▢ Amount and type of clothing worn
 - ▢ Heat produced by the body



TYPES OF HEAT INJURIES

- ▮ Heat cramps
- ▮ Heat exhaustion
- ▮ Heat stroke

HEAT CRAMPS

- ▮ Excessive salt lose
- ▮ Painful cramps of muscles usually in arms, legs and stomach area
- ▮ Heat exhaustion may be present
- ▮ Body temperature may be normal
- ▮ Avoided by acclamation, proper nutrition and hydration

HEAT EXHAUSTION

- ☀ Excessive salt and water loss
- ▢ Skin is cool and moist; pulse is rapid and blood pressure may be low
- ▢ Other symptoms are profuse sweating, headaches, tingling in hands and feet, paleness, difficulty breathing, irregular heart beat, loss of appetite, nausea and vomiting
- ▢ Oral temperature may be lower than normal if the person is hyperventilating



HEAT EXHAUSTION CONT.

- ▮ Trembling, weakness, lack of coordination and a slight clouding of senses to momentary loss of consciousness complete the classic picture
- ▮ Avoided by proper work/rest cycles and good hydration





!!!!CAUTION!!!!

Those that suffered from heat exhaustion are 'fragile' and can have another episode easily

HEAT STROKE

- ☀ A medical emergency and death rate is high
- ▢ The body's heat regulatory mechanism stops functioning and the main avenue of heat loss is blocked
- ▢ Early signs are headache, dizziness, delirium, weakness, nausea, vomiting and excessive warmth
- ▢ Skin is usually hot, red and dry
- ▢ Body temperature may be as high as 106 F

HEAT STROKE CONT.

- ✱ The casualty may go through heat cramps or heat exhaustion; a sudden collapse and loss of consciousness followed by coma and convulsions may occur
- ▢ Sweating may or may not be present
- ▢ Avoided by proper work/rest cycles and full hydration



!!!!CAUTION!!!!

Heat stroke casualties are more
susceptible to a second attack

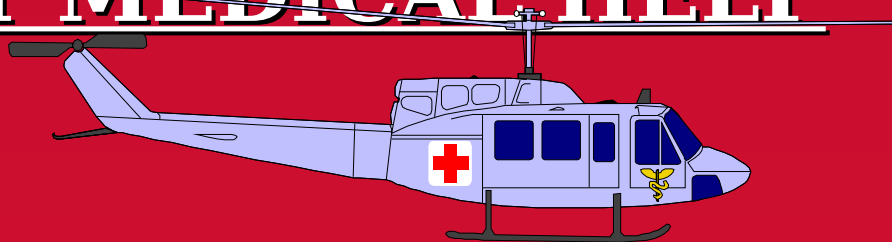


FIRST AID FOR HEAT CRAMPS AND EXHAUSTION

- ☀ Move soldier to a shady area and loosen clothing if possible
- ▢ Slowly give large amounts of cool water
- ▢ Pour water on soldier and fan
- ▢ Elevate legs for exhaustion
- ▢ Watch soldier, if possible release from strenuous activity
- ▢ Get medical help if symptoms continue

FIRST AID FOR HEAT STROKE

- ▮ Lower casualty's body temperature ASAP
- ▮ Elevate soldier's legs
- ▮ Have soldier drink water if possible
- ▮ **GET MEDICAL HELP**



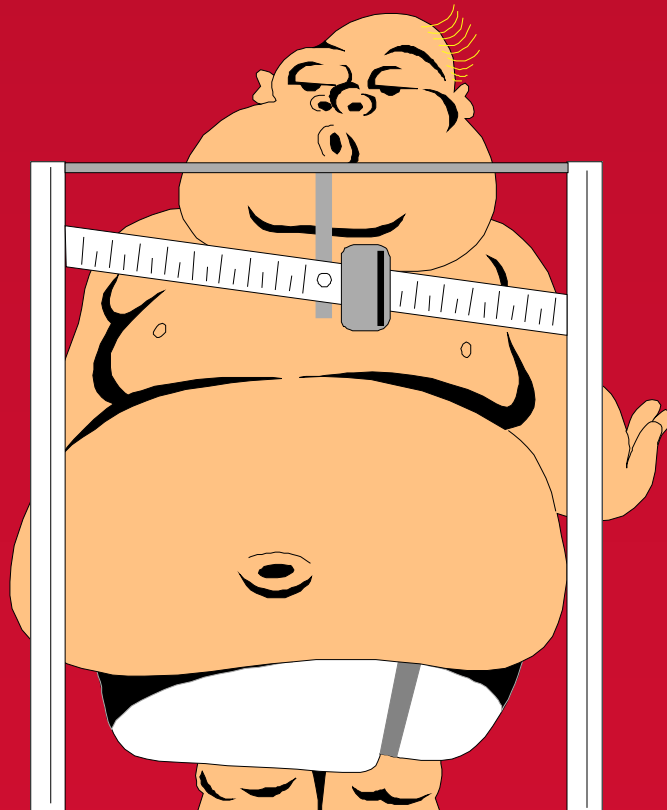
PREDISPOSING FACTORS

Acclimatization; 7-14 days, 2 hours
day



PREDISPOSING FACTORS

Overweight and fatigue



PREDISPOSING FACTORS

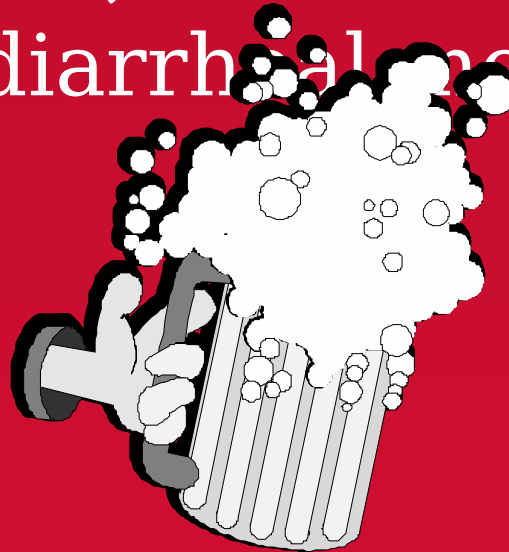
Heavy meals and hot food



PREDISPOSING FACTORS

Alcohol and drugs

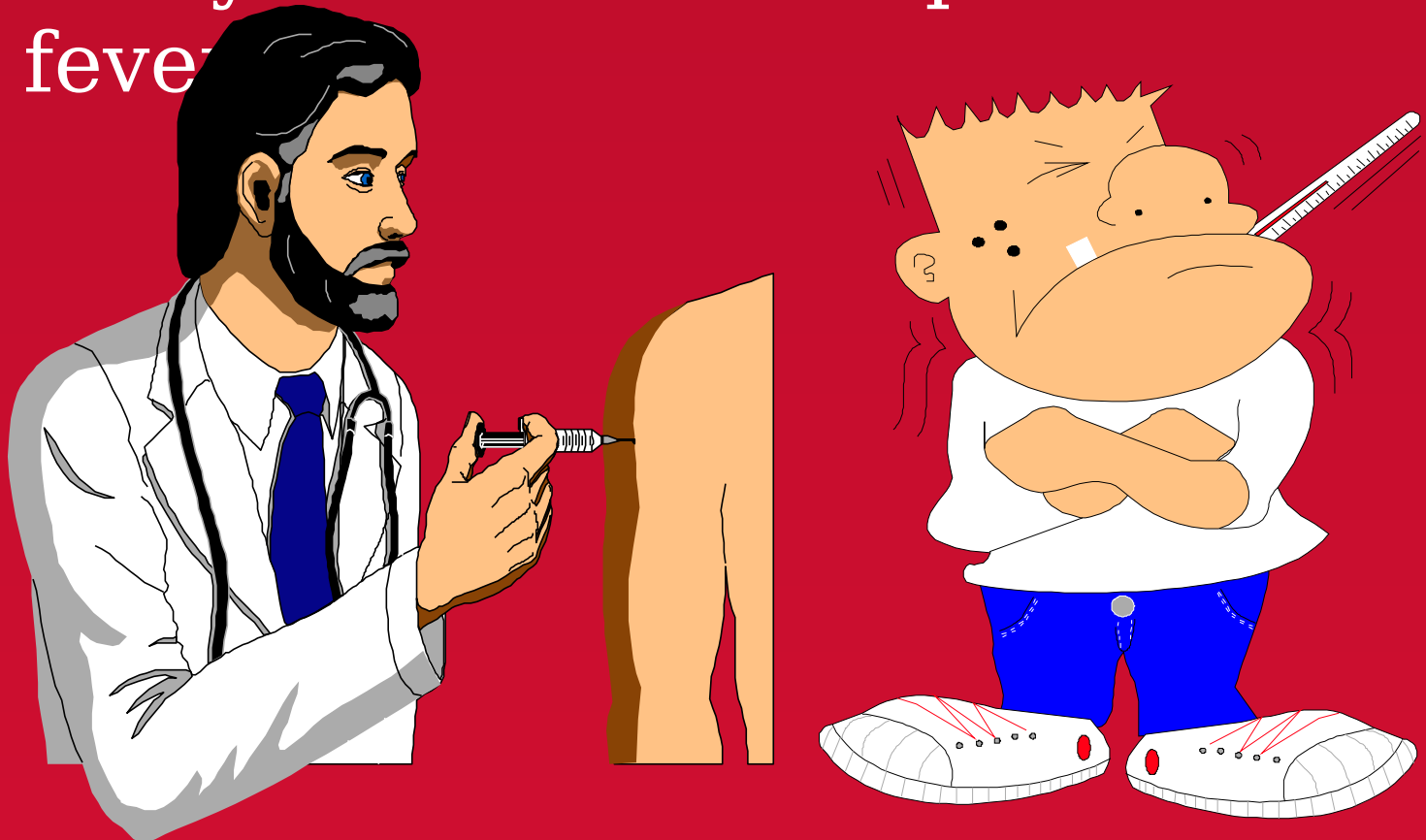
- ▮ Drugs that inhibit sweating are atropine, antihistamines, some tranquilizers, cold medicine and some antidiarrheal medicines



PREDISPOSING FACTORS

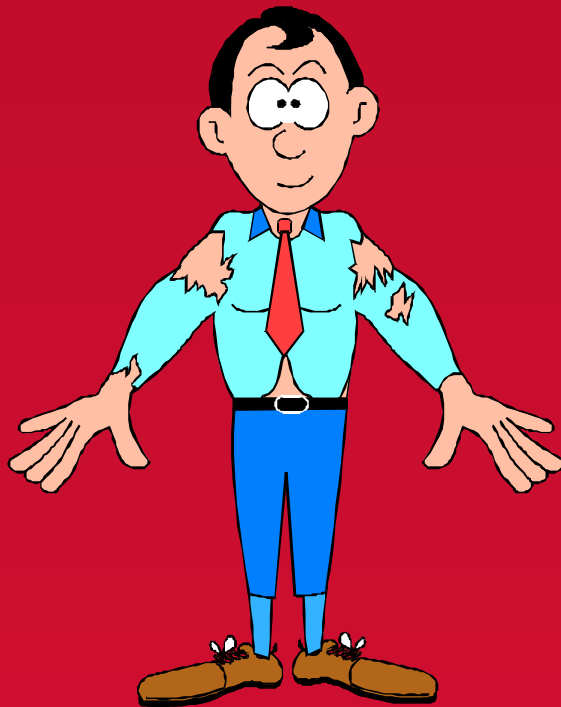
Fevers

- Many immunizations produce fever



PREDISPOSING FACTORS

Tight clothing





PREVENTING HEAT INJURIES

- ▯ Replace water loss; by sweating a person can lose more than 1 quart per hour
- ▯ Drink small amounts of water frequently regardless of thirst
- ▯ Use heat injury prevention chart as a guide
- ▯ Provide adequate water at all times
- ▯ Do not provide more than 1 1/2 quarts per hour or person may succumb to Hyponetremia or too much water in the body.

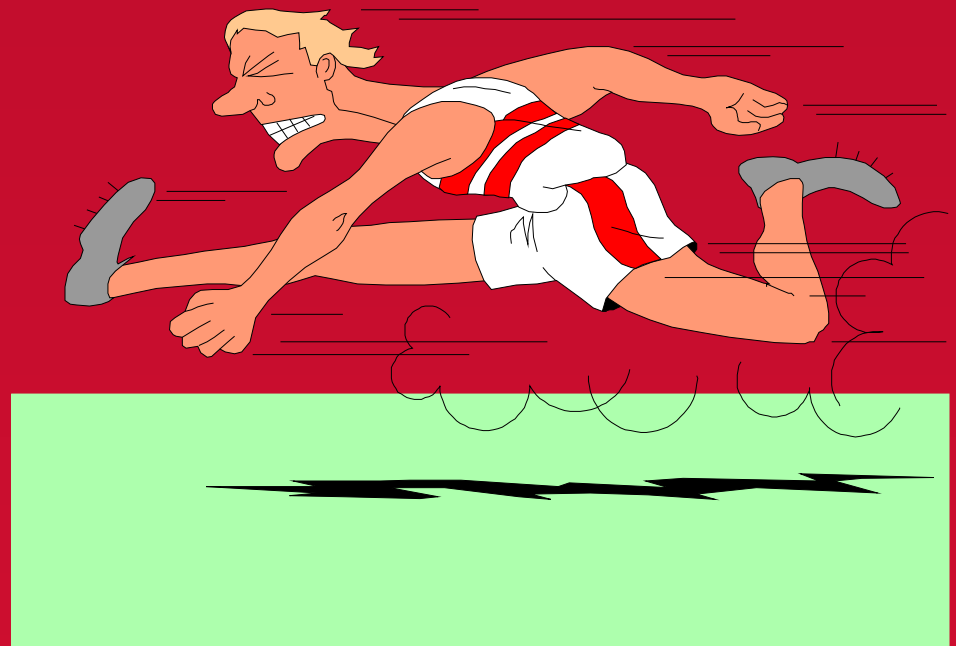


PREVENTING HEAT INJURIES

- ✱ Maintain acclimatization
 - Begin acclimatization with first exposure
 - Continue with two 50 minutes periods daily
 - Limit intensity and time of exposure for those not acclimatized
 - Acclimatization can be lost if remove from the hot enviroment for 1 month

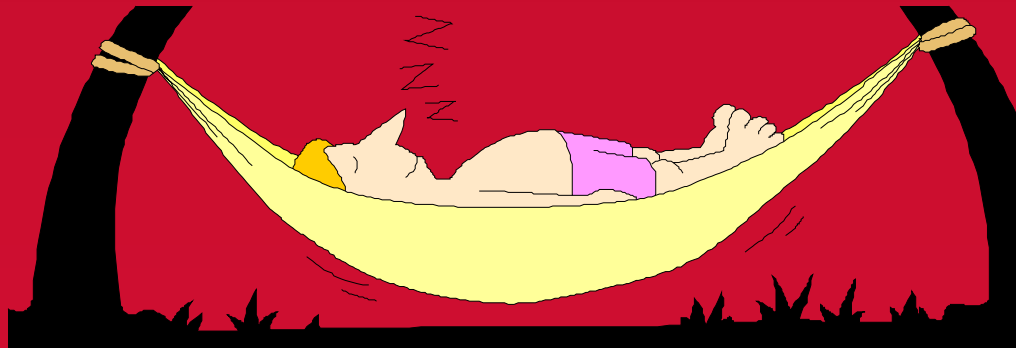
PREVENTING HEAT INJURIES

Maintain good physical condition



PREVENTING HEAT INJURIES

- ✱ Establish a good work/rest schedule; must be tailored to fit climate, physical condition of personnel and military situation
 - Work in cooler hours
 - Avoid working in direct sunlight
 - Slowly increase exposure to those becoming acclimatized
 - Use heat injury prevention chart as a guide



!!!CAUTION!!!

Overexertion can cause heat injuries at temperatures lower than 75 degrees F on the WBGT index.



PREVENTING HEAT INJURIES

- ☀ Use proper clothing to protect yourself
 - Loose clothing
 - Wear least amount when possible
 - Obtain the WBGT
 - Add 10 degrees to WBGT when wearing body armor or MOPP



REVIEW

- ▮ Types of heat injuries
- ▮ Factors that influence
- ▮ Prevention



QUESTIONS?

